

Listing of Claims:

Claim 1 (currently amended): A system for providing peritoneal dialysis to a patient, the system comprising:

a catheter having an inflow lumen and an outflow lumen in communication with the patient's peritoneal cavity; and

a fluid circuit in fluid communication with the catheter, the fluid circuit comprising:

a fluid loop, the fluid loop configured to circulate dialysate into, through and out of a peritoneal cavity of the patient; patient at an outflow rate from the peritoneal cavity greater than an inflow rate to the peritoneal cavity,

a supply of a dialysate coupled to the fluid circuit; circuit, and

at least one of a (i) a chamber coupled to the fluid loop through which the dialysate can be fed at a feed rate into the fluid loop, and (ii) a cleaning device coupled to the fluid loop via a cleaning fluid path wherein the dialysate can be fed into the cleaning fluid path and cleaned at a cleaning rate prior to reintroduction into the fluid loop;

~~a cycler that pumps the dialysate into the fluid circuit at a feed rate and circulates the dialysate at a circulation rate along the fluid loop to remove a therapeutic effective amount of solutes and excess water from the patient; and~~

~~a discharge fluid path coupled to the fluid loop through which the dialysate is drained from the fluid circuit at a discharge rate that is less than the circulation rate, allowing the dialysate to be circulated a plurality of times along the fluid loop prior to discharge.; and~~

a cycler that pumps the dialysate into the fluid circuit at a feed rate and circulates the dialysate at a circulation rate along the fluid loop to remove a therapeutic effective amount of solutes and excess water from the patient, the cycler further configured to drain the dialysate from the fluid circuit at a discharge rate that is less than the circulation rate and at least substantially equal to a difference between the outflow rate and the inflow rate, allowing the dialysate to be circulated a plurality of times along the fluid loop prior to discharge.

Claim 2 (previously presented): The system of Claim 1 further comprising at least one pressure sensor coupled to the fluid circuit for sensing a pressure.

Claim 3 (original): The system of Claim 2 wherein the feed rate and the discharge rate are maintained at an approximately equal rate that is about one half of the circulation rate allowing the dialysate to circulate about two times along the fluid loop.

Claim 4 (original): The system of Claim 1 wherein the feed rate and the discharge rate are maintained at an approximately equal rate that is about one third of the circulation rate such that the dialysate is capable of circulating about three times along the fluid loop.

Claim 5 (previously presented): The system of Claim 1 wherein the cycler comprises two pumps.

Claim 6 (previously presented): The system of Claim 1 wherein the cleaning device contains sorbents for adsorbing at least one of urea, phosphate and creatinine.

Claim 7 (previously presented): The system of Claim 1 wherein the cleaning device contains an ion exchange resin.

Claim 8 (previously presented): The system of Claim 1 wherein the cleaning device contains at least one electrolyte for addition to the dialysate.

Claim 9 (previously presented): The system of Claim 1, wherein the cleaning device contains at least three layers.

Claim 10 (previously presented): The system of Claim 1, the chamber allowing the fluid loop to accommodate a variable increase in the dialysate during treatment.

Claim 11 (previously presented): The system of Claim 10 wherein the variable increase in dialysate is due to an addition of ultrafiltrate to the fluid loop as the dialysate dialyzes the patient.

Claim 12 (previously presented): The system of Claim 1 further comprising at least one valve connecting the catheter to the fluid circuit.

Claim 13 (currently amended): A system for providing peritoneal dialysis to a patient, the system comprising:

a catheter having an inflow lumen and an outflow lumen in communication with the patient's peritoneal cavity; and

a fluid circuit in fluid communication with the catheter, the fluid circuit comprising:

a fluid loop configured to circulate dialysate into, through and out of a peritoneal cavity of the patient via only a single loop of the fluid loop, the fluid loop including a first fluid line in communication with a dialysate supply, a second fluid line in communication with a discharge fluid path, a third line in communication with an outflow fluid path from the peritoneal cavity, and a fourth fluid line in communication with an inflow fluid path to the peritoneal cavity;

a supply of a dialysate; dialysate, and

a chamber coupled to the fluid loop through which the dialysate can be fed at a feed rate into the fluid loop; and

a cycler that pumps the dialysate into the fluid loop and circulates the dialysate along the fluid loop at a circulation rate to remove a therapeutic effective amount of solutes and excess water from the patient; and

[[a]] wherein the discharge fluid path is coupled to the fluid loop second and third fluid lines through which the dialysate is drained from the fluid circuit at a discharge rate effective to cause the dialysate to be circulated a plurality of times along the fluid loop prior to discharge.

Claim 14 (original): The system of Claim 13 wherein the supply of dialysate contains about 25 liters or less of dialysate.

Claim 15 (original): The system of Claim 14 wherein the dialysate is contained in four separate supply containers each having a capacity of about 6 liters or less.

Claim 16 (original): The system of Claim 13 wherein the circulation rate is about 300 ml/min or less.

Claim 17 (original): The system of Claim 13 wherein the chamber is capable of mixing and heating the dialysate.

Claim 18 (original): The system of Claim 13 wherein the chamber is coupled to the fluid loop via a fluid supply path.

Claim 19 (previously presented): The system of Claim 18 wherein the feed rate and the discharge rate are maintained at an approximately equal rate that is less than the circulation rate such that the dialysate is capable of circulating a plurality of times along the fluid loop.

Claim 20 (original): The system of Claim 13 wherein the chamber is directly coupled to the fluid loop.

Claim 21 (original): The system of Claim 20 wherein the dialysate is circulated along the fluid loop a number of times that is approximately equal to the feed rate divided by a difference between the circulation rate and the discharge rate.

Claim 22 (original): The system of Claim 13 wherein the dialysate is continuously fed into, circulated within and drained from the fluid loop over a treatment period of about 8 hours or less.

Claim 23 (previously presented): The system of Claim 13 wherein the chamber can be adapted to accommodate a variable increase in the dialysate during treatment.

Claim 24 (currently amended): A system for providing peritoneal dialysis to a patient, the system comprising:

a catheter having an inflow lumen and outflow lumen in communication with the patient's peritoneal cavity; and

a fluid circuit in fluid communication with the catheter thereby defining only a single fluid loop capable of circulating dialysate into, through and out of the peritoneal cavity at an outflow rate from the peritoneal cavity greater than an inflow rate to the peritoneal cavity, the fluid circuit comprising:

a supply of a dialysate coupled to the fluid ~~loop; loop,~~

~~a cycler that pumps the dialysate into the fluid loop at a feed rate and circulates the dialysate along the fluid loop at a circulation rate to remove a therapeutic effective amount of solutes and excess water from the patient;~~

a cleaning device coupled to the fluid loop via a cleaning fluid path wherein the dialysate can be fed into the cleaning fluid path and cleaned at a cleaning rate prior to reintroduction into the fluid ~~loop; and loop, and~~

a discharge fluid path coupled to the fluid loop ~~through which the dialysate is drained; and~~

a cycler that pumps the dialysate into the fluid loop at a feed rate and circulates the dialysate along the fluid loop at a circulation rate to remove a therapeutic effective amount of solutes and excess water from the patient, the cycler further configured to drain dialysate at a discharge rate approximately equal to a difference between the outflow rate and the inflow rate, the discharge rate effective to circulate the dialysate a plurality of times along the fluid loop prior to discharge.

Claim 25 (original): The system of Claim 24 wherein the fluid loop is coupled to the supply of dialysate, the cleaning fluid path and the discharge fluid path via a cycler.

Claim 26 (previously presented): The system of Claim 25 wherein the cycler includes a fluid circuit coupled to a pumping mechanism and a plurality of valves such that the cycler is capable of automatically controlling the flow of dialysate into and out of the fluid loop during treatment.

Claim 27 (original): The system of Claim 24 wherein the cleaning device contains a sorbent material capable of non-selective removal of solutes from the dialysate prior to reuse.

Claim 28 (original): The system of Claim 27 wherein the sorbent material is selected from the group consisting of carbon, activated charcoal and combinations thereof.

Claim 29 (previously presented): The system of Claim 24 wherein the cleaning device contains an ion exchange resin.

Claim 30 (previously presented): The system of Claim 24 wherein the cleaning device contains a sorbent material capable of selective removal of solutes from the dialysate.

Claims 31 to 65 (canceled).